

Chapter 5

Convoy Operations

Convoy operations are planned according to FM 55-30 and FM 55-312. Joint Service regulations AR 55-29, AR 55-162, and AR 55-80 provide guidance on oversize/overweight vehicles and convoy moves. Civil highway authorities set limits on vehicle weight, length, width, and height to ensure the safety of the highway user and to preclude damage to the infrastructure. DOD policy states that no vehicle movement that exceeds legal limitations or regulations, or that subjects highway users to unusual hazards, will be made without permission from state, local, and/or toll authorities. Loads that exceed maximum allowable weight or dimensions will be transported by other modes or commercial transporters that conform with the limits of each state.

Special provisions apply during a national defense emergency and for certain other critical defense moves. During emergencies, permit requests may be made by the most expeditious means of communication available. Convoys and oversize/overweight moves must be coordinated with civil authorities to ensure that the selected routes are passable. These moves may be made without prior written permits from civil authorities. However, all requests should later be confirmed in writing. The POCs for coordinating movement are given in the MTMCTEA's Directory of Highway Permit Officials and MOBCON Coordinators.

CONVOY ORGANIZATION

5-1. The organization of a convoy consists of the following:

ORGANIZATIONAL ELEMENTS

5-2. A convoy commander can better control a convoy if it is broken into smaller, more manageable groups. Whenever possible, convoys are organized along organizational lines, such as platoon, company, and battalion. The three organizational elements of a convoy are a march column, a serial, and a march unit (see Figure 5-1, page 5-2). They are described as follows:

- A march column is a group of two to five serials. It represents approximately a battalion-to-brigade size element. Each column has a column commander.
- A serial is a subdivision of the march column. It consists of elements of a march column (convoy) moving from one area over the same route at the same time. All the elements move to the same area and are grouped under a serial commander. The serial commander is directly responsible to the convoy commander. A serial may be divided into two or more march units.
- A march unit is a subdivision of the serial. It comes under the direct control of the march unit commander. It is the smallest organized subgroup of the convoy and usually will not exceed 20 vehicles.

FUNCTIONAL ELEMENTS

5-3. All convoys, regardless of size, are made up of three functional elements. These elements consist of a head, a main body, and a trail (see Figure 5-2, page -2). These elements are explained as follows:

- The head is the first vehicle of each column, serial, or march unit. It carries the pacesetter, who sets the pace to maintain the prescribed schedules and rates of march. The pacesetter leads the convoy on the proper route. With the head performing these duties, the convoy commander is free to move up and down the convoy to enforce march discipline.
- The main body follows right behind the head (pacesetter) and consists of the majority of vehicles in the convoy. It is the largest part of the convoy. It can be subdivided into serials and march units for easier control and management.
- The trail is the last section of a march element. The trail consists of recovery, maintenance, and medical support. The trail officer is responsible for march discipline, breakdowns, straggling vehicles, and control at the scene of any accident involving his march unit until the arrival of civilian authorities. Figure 5-3, page 5-3, shows equipment that can potentially be included in the trail.

TYPES OF FORMATIONS

5-4. The convoy must be organized to meet mission requirements and provide organizational control. The convoy commander decides how the convoy is formed for movement. The three basic types of formations are close column, open column, and infiltration. They are described as follows:

- Close column provides the greatest degree of convoy control. It is characterized by vehicle intervals of 25 to 50 meters and speeds under 25 mph. Close column is normally used during limited visibility or on poorly marked or congested roads.
- Open column is the preferred formation used during movement. It is characterized by vehicle intervals of 100 meters or more and speeds in excess of 25 mph. Open column is normally used on well marked open roads with good visibility.
- Infiltration has no defined structure. Vehicle intervals and speeds will vary. This type of formation is normally not used during movement. Infiltration should only be used as a last resort in extremely congested areas or when the mission dictates.

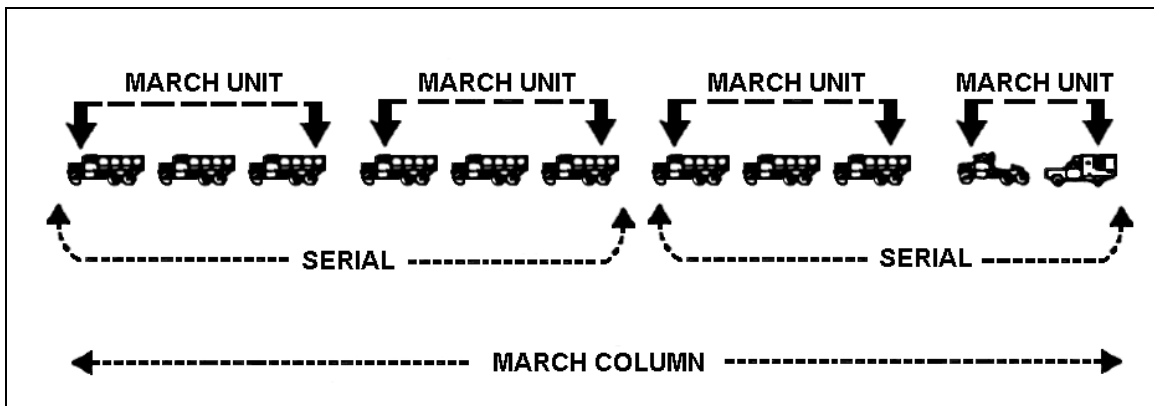


Figure 5-1. Convoy Organizational Elements

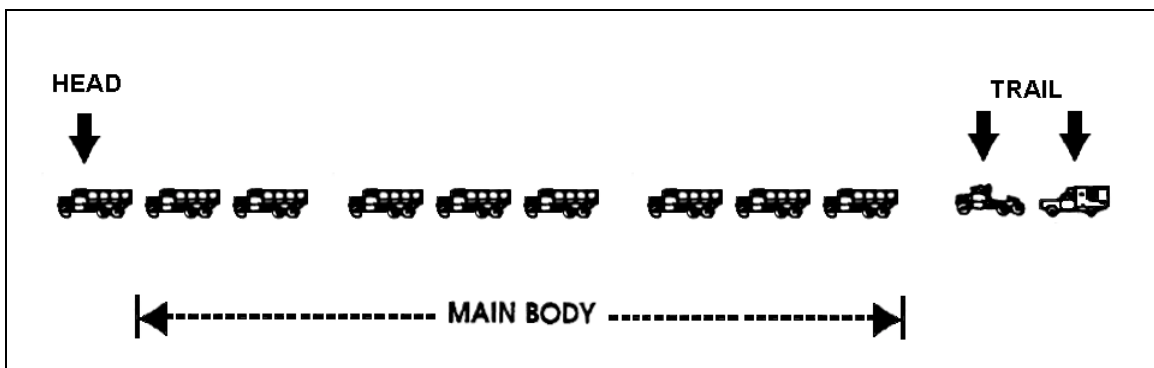


Figure 5-2. Functional Elements of a Convoy

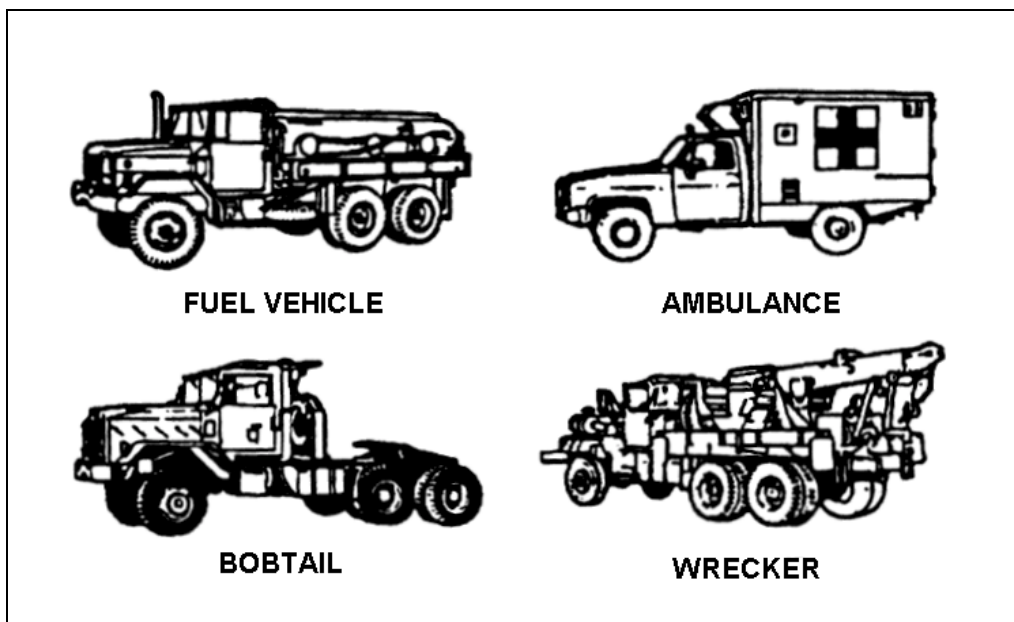


Figure 5-3. Equipment Included in the Trail

A motor convoy is a group of vehicles organized for the purpose of control and orderly movement with or without escort protection. This chapter provides guidance for planning, organizing, and conducting convoys. A convoy is defined as follows:

- Any group of six or more vehicles temporarily organized to operate as a column, with or without escort, proceeding together under a single commander.
- Ten or more vehicles per hour dispatched to the same destination over the same route.
- Any one vehicle, with or without escort, requiring the submission of a special haul permit.

NOTE: Dimension and weight limitations on vehicles vary greatly. Check local rules and restrictions before any military motor movement. However, for gross planning purposes, vehicles are normally considered over dimensional or overweight if they exceed the following:

Width	102 inches
Height	162 inches (13 feet, 6 inches)
Weight	20,000 pounds for single axles
	34,000 pounds for tandem axles
	80,000 pounds for gross weight
Length	48 to 60 feet for semitrailers

CONVOY PERSONNEL

5-5. There are certain personnel associated with military convoys. The following is a list of these convoy personnel.

CONVOY COMMANDER

5-6. Each convoy will be organized under the control of a convoy commander. Since the convoy commander must be free to supervise the movement of the convoy, there is no specified location for him in the convoy. The convoy commander should have contact with all subordinate commanders during the movement.

SERIAL/MARCH UNIT COMMANDERS

5-7. Serial/march unit commanders are positioned where they can best control their convoy element. Although commanders may want to place themselves at the head of their units, it is not recommended because this will restrict their ability to control all of their vehicles.

NOTE: Convoy, serial, and march unit commanders should avoid driving in the left hand lane because the limited speed of military vehicles can easily cause them to become a hazard to faster moving civilian traffic.

PACESETTER

5-8. The convoy commander will designate a pacesetter for the convoy. The pacesetter is in the first vehicle in the march element, normally the slowest, heaviest vehicle, excluding oversize/overweight vehicles. The pacesetter will perform the following:

- Maintain the rate of march established by the convoy commander.
- Meet all established times at SPs, critical points, CPs, and RPs.
- Inform the convoy commander of any obstacles or hazards that may cause a deviation from the established route, such as construction, detours, or other obstacles.

TRAIL OFFICER

5-9. The trail officer is positioned at the rear of a march element. He checks and observes vehicles at the SP and keeps the convoy commander informed on the status of vehicles that fall out of the convoy. He oversees all maintenance, recovery, accident investigation, medical aid, and disposition of disabled equipment. He picks up all guides and markers left by preceding march elements.

GUIDES

5-10. Guides are used to ensure the convoy follows the prescribed route and become very important when operating in an area where road signs are poor or nonexistent. They assist convoys in locating supported units, preventing conflict with other convoys, and providing information on the route. Guides should be instructed that the convoy does not have priority over civilian traffic when not on a military reservation. Guides do not have authority to disregard traffic lights or other traffic devices on public roads.

CIVILIAN POLICE ESCORT

5-11. The convoy commander should request the assistance of civilian police, whenever possible, for all critical areas not on military reservations through which the convoy will pass. These areas include the following:

- Major intersections.
- Entrances to and exits from expressways and main routes.
- Densely populated and industrial areas.
- Entrances to and exits from rest halt areas.

The convoy commander should request that the installation provost marshal arrange for civilian police support in the immediate vicinity of the installation where the convoy originates.

VEHICLE PLACEMENT

5-12. The placement of the vehicles in an organizational element of a convoy is determined by many factors. One of the major factors is the danger of rear-end collisions. To reduce the possibility of injury to personnel, place vehicles transporting troops in the first march unit of the main body of the convoy. When empty trucks or trucks loaded with general cargo are available, use them as buffer vehicles between those transporting personnel and those loaded with hazardous cargo. Other factors to consider include the following:

- Position those vehicles that require the longest unloading time near the front of the main body of the convoy. This will shorten the turnaround time.
- If the convoy consists of vehicle-trailer combinations, have one prime mover without trailer (bobtail) per 10 vehicle-trailer combinations to support the recovery operations.
- Place vehicles transporting hazardous cargo in the last serial of the convoy but not in the trail party.

CONVOY COMMUNICATIONS

5-13. Convoy commanders and NCOICs must effectively communicate with their subordinate leaders and vehicle drivers. Communications must be well planned and understood by all personnel involved in the movement. Radio is the principal means of communications within a motor convoy. It allows for the rapid transmission of orders and messages between widely separated elements in a convoy. Plans for radio use must be given in orders, in the unit SOP, and in the movement plan. Consideration needs to be given to the number of radios in the unit and distance over which elements of the convoy are trying to communicate.

5-14. Another means of communication is visual communications. These may involve hand and arm signals, flags, headlights, and protechnic signals and messages. In addition to hand and arm signals, messages may be written on a board and posted along the route or displayed by a guide in view of the oncoming vehicles. In the event of radio silence or for other reasons, the drivers or their assistants can use visual signals for convoy control. These signals should be specified in a SOP so that drivers are completely familiar with them. The signals must also be trained and rehearsed.

5-15. The next group of signals include audio signals which consists of the use of horns, whistles, and verbal messages. When possible, serial commanders should be equipped with loudspeakers to issue verbal instructions.

CONVOY IDENTIFICATION

5-16. Convoy identification must include the following:

CONVOY CONTROL NUMBER

5-17. Each convoy is identified by its CCN, which is assigned by the ITO where the convoy originates. The CCN identifies the convoy during its entire movement. It is placed on both sides of each vehicle in the convoy. The CCN is also placed on the top of the hood of the first and last vehicles of each march element.

5-18. For active duty component units, TC-ACCIS provides the capability for preparing the DD Form 1265 and DD Form 1266. The ITO provides the CCN through TC-ACCIS. The CCN has 10 digits. The first two digits identify the location (post or state) from which the convoy originates. The next four digits represent the Julian date. The next three digits are the sequence number, followed by a single digit, designating the type of movement. The type of movement designators are as follows:

Outsize/overweight vehicles	- S
Explosives	- E
Hazardous cargoes	- H
All other convoys	- C

An example is FE 5234 039 C, a convoy leaving from Fort Eustis, VA, on 22 August 1995. It is the 39th convoy of the day and is a regular convoy without any special requirements.

NOTE: CCN may be different than what is described above based on command directives, HN, or STANAGs.

VEHICLE IDENTIFICATION

5-19. The first vehicle (pacesetter) in each element of the convoy must have on its front a sign with 4-inch black letters on a yellow background reading CONVOY FOLLOWS. The last vehicle of each convoy element will have on the rear a sign reading CONVOY AHEAD. CONVOY AHEAD signs are not on maintenance or medical vehicles unless that vehicle's purpose is to represent the end of the convoy. Refer to AR 55-29 for the dimension of the convoy signs.

5-20. Mark each march element of a convoy with flags 12 inches in height and 18 inches in length. The lead vehicle is fitted with a blue flag and the rear vehicle with a green flag. Mount the flag on the left front of the lead and trail vehicle so that it will not interfere with the vision of the driver or with any functional component of the vehicle (see Figure 5-4, page 5-8).

5-21. The vehicles of the column, serial, and the march unit commanders must carry on the left front bumper a white and black flag. Trail party vehicles will carry an international orange safety flag. Local police or MP escort vehicles will not display convoy identification flags. Convoy identification flags are available through local supply channels as follows:

- Lead vehicle flag (NSN 8345-00-543-6912).
- Last (rear) vehicle flag (NSN 8345-00-543-6913).
- Commander's flag (NSN 8345-00-543-6911).

NOTE: A standard flagstaff attachment (NSN 8345-00-242-3650) can be used for attaching the flags to the vehicles.

A rotating amber warning light will be placed on cranes (wreckers), oversize or overweight vehicles, and the first and last vehicles in a convoy. The lights will be on at all times when the convoy is operating outside a military installation.

SAFETY EQUIPMENT AND WARNING DEVICES

5-22. While moving at night or during periods of reduced visibility, lead, trail, and oversize/overweight vehicles will operate four-way flashers. Convoy vehicles will also display reflective L-shaped symbols 12 inches long and 2 inches wide at the lower corners of the vehicle's body (refer to AR 55-29). See Figure 5-5, page 5-8, for specifications.

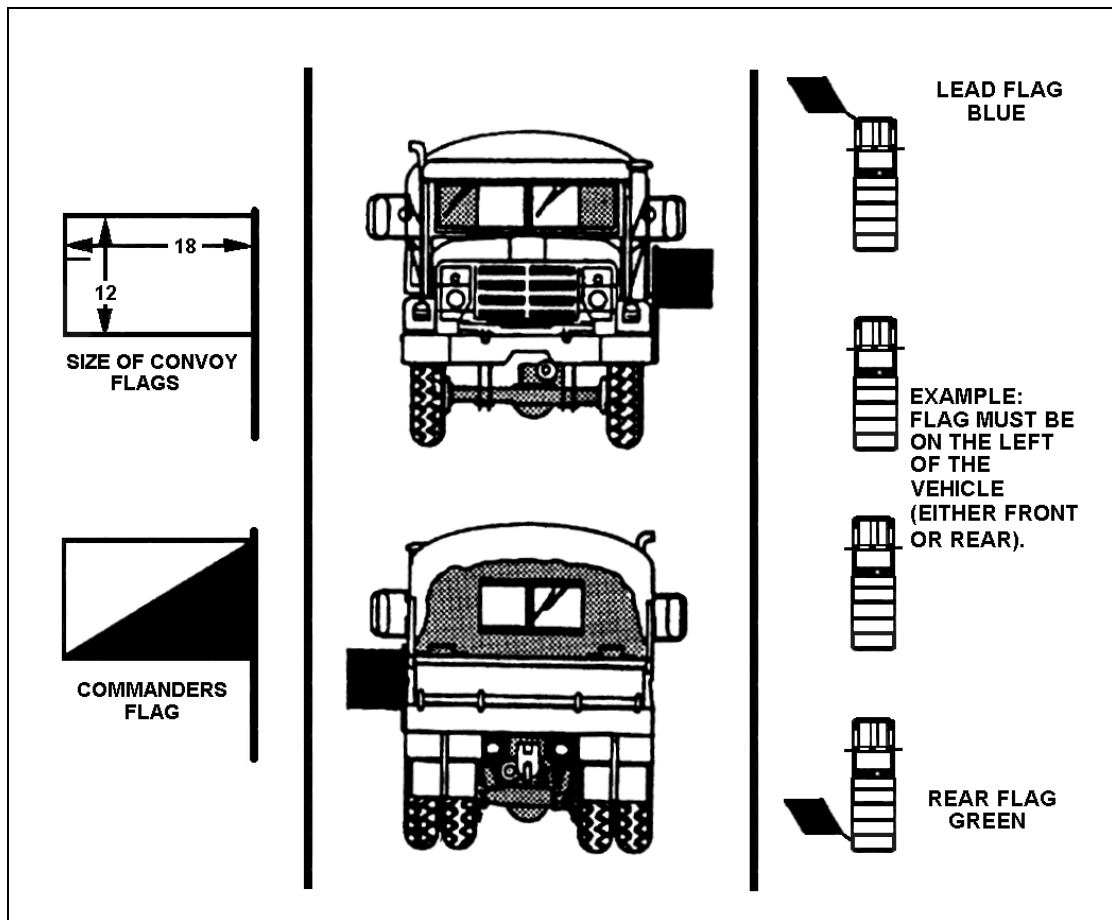


Figure 5-4. Flag Placement on a Vehicle

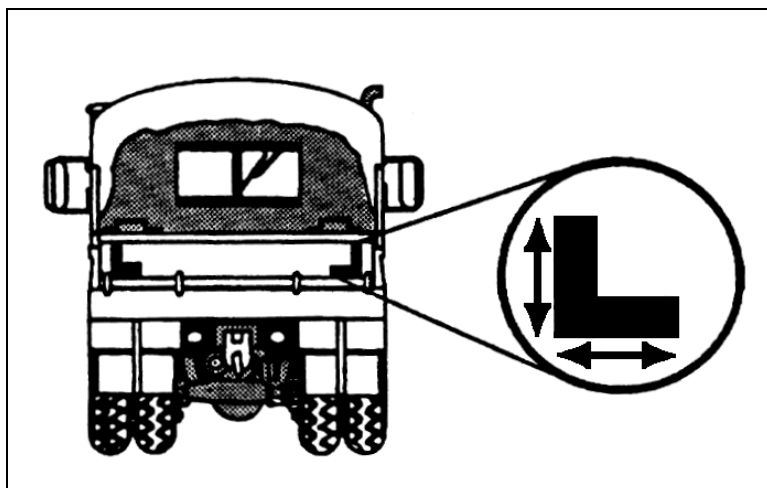


Figure 5-5. Reflective L-Shaped Symbol

5-23. Headlights of all vehicles moving in convoy or halted on road shoulders must be on low beam at all times except where prohibited by local ordinances. While halted on shoulders, vehicles equipped with emergency flasher systems must also have these lights operating. The following safety equipment is needed in all vehicles:

- An approved fire extinguisher.
- An approved first aid kit.
- One set (pair) of tire chains when snow or ice conditions may be encountered.
- An approved highway warning kit.

Road guides must wear high visibility devices such as a reflective vest (NSN 8415-00-177-4974). Baton flashlights must also be provided when the convoy operates during darkness or when visibility is reduced to 500 feet or less.

FINAL ACTIONS BEFORE DEPARTURE

5-24. The convoy commander or his designee inspects all vehicles in the convoy staging area to ensure that they are in satisfactory condition. He ensures on-the-spot corrections are made as soon as possible. Vehicles should be checked for the following:

- Properly completed dispatch (DD Form 1970).
- PMCS completed and deficiencies and shortcomings are corrected (DA Form 2404).
- Required basic issue items.
- Check fuel levels.
- Safety equipment (fire extinguishers, first aid kit, and so on.)
- Properly secured secondary loads.
- The correct CCN, flags, signs, lights, and placards.
- Headlights on low beam.

After vehicles and drivers have been inspected and the convoy is organized and ready to move out, assemble the personnel for a final briefing. Distribute strip maps to all drivers. Use an enlarged strip map (a blackboard drawing or other drawing) to explain details of the route. Conclude the briefing with a question and answer period.

DRIVER PREPARATION

5-25. The convoy commander ensures the following:

- Drivers and assistant drivers possess a valid OF 346 for the piece of equipment they are operating.
- Only experienced drivers are selected to operate vehicles on public highways.
- Drivers are prepared, are in the proper uniform, and have required equipment.
- Drivers have 8 hours of rest within 12 hours before the convoy departs (refer to AR 55-29).

The convoy commander also ensures that drivers and assistant drivers are briefed thoroughly before the convoy departs. He issues strip maps and orders to drivers and briefs the following topics:

- Convoy organization and vehicle assignments.
- Departure and arrival times.
- Compliance with traffic signals.
- Route of march.
- Maximum and minimum speeds.
- Actions at halts.
- Route and highway markers in accordance with the strip map.
- Vehicle gaps or intervals (for urban areas, expressways, conventional routes, and entrance and exit routes).

NOTE: A simple method to use is the "4 second rule." It establishes an interval of 4 seconds between vehicles in the convoy. The interval can be maintained regardless of the speed of the convoy, and it allows for the space between vehicles to be adjusted as the rate of march changes.

- Schedule rest stops and refuel points.
- Vehicle recovery operations.
- Obedience to civil authorities and MP.
- Location and time of scheduled halts.
- Action to take if separated from the convoy.
- Actions in the event of breakdown or accident.
- Refueling procedures.
- Communications/signal procedures.
- Light discipline.
- Security en route and during halts.
- Weather forecast and actions during inclement weather.
- Chain of command and locations.
- Safety during movement and during halts.

NOTE: The assistant driver will remain awake at all times and keep the driver alert. The use of an assistant driver DOES NOT double the amount of driving time for the convoy.

ROAD MOVEMENT PLANNING

5-26. All convoy movements must be planned out in advance. The following factors and formulas will assist in convoy calculations.

TIME-DISTANCE FACTORS

5-27. Time-distance factors are used to perform calculations for planning highway movements. Understanding time and distance factors is critical when planning a convoy. Figure 5-6 shows the relationship between distance factors and time factors.

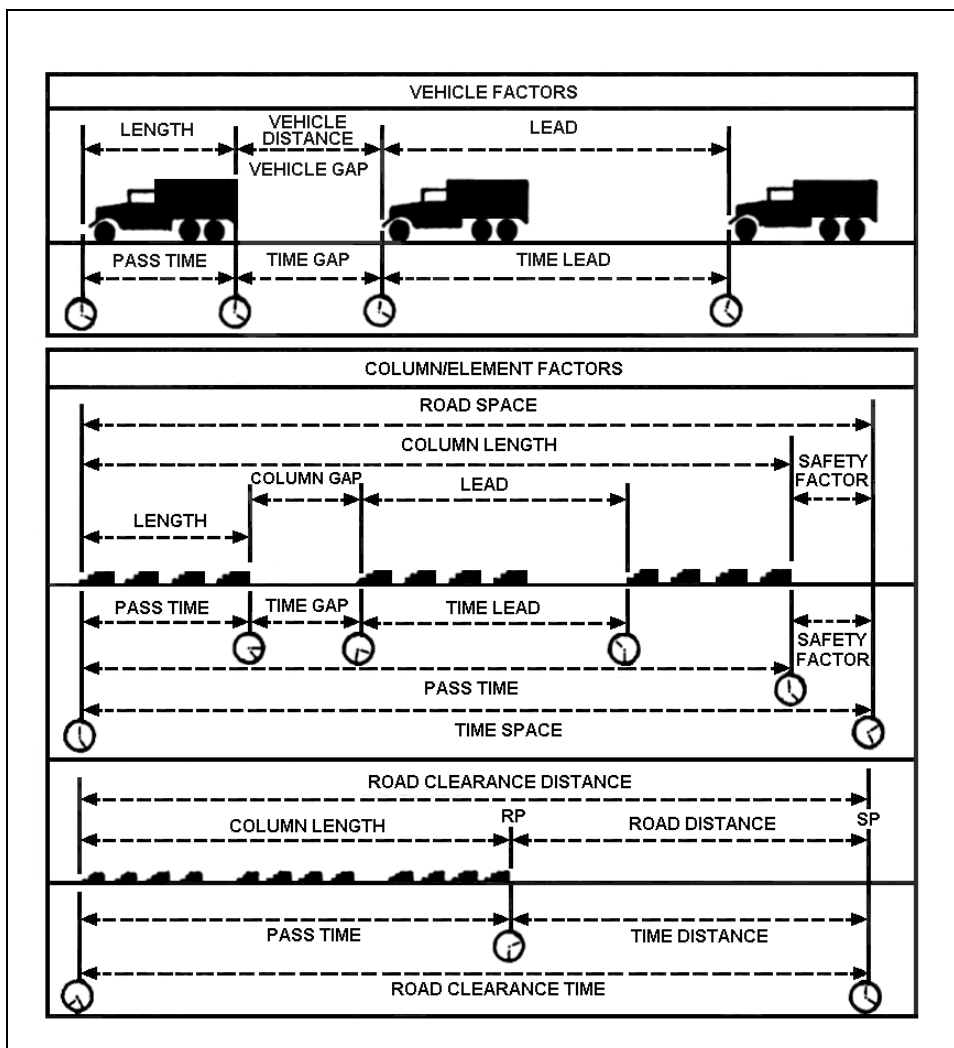


Figure 5-6. Distance and Time Factors

5-28. Distance factors are expressed in kilometers or miles. The following explains distance factors:

- Length is the length of the roadway the convoy occupies, measured from the front bumper of the lead vehicle to the rear bumper of the trail vehicle.
- Road space is the length of a convoy plus any additional space added to the length to avoid conflict with leading and following traffic.

- Gap is the space between vehicles (vehicle interval) or between elements of a convoy (column gap). It is measured from the rear of one element to the front of the following element.
- Road clearance distance is the distance that the head of a convoy must travel for the entire convoy to clear a given point along the route. It is the sum of the convoy's length and road distance.

5-29. Time is expressed in hours or minutes. The following describes time factors:

- Pass time is the time required for a convoy or a subgroup to pass a given point on the route.
- Time space is the time required for a convoy or one of its subgroups to pass any point along the route plus any additional time required for safety.
- Time gap is the time between vehicles or elements as they pass a given point. It is measured from the trail vehicle of one element to the lead vehicle of the following element.
- Time lead is the time between individual vehicles or elements of a convoy, measured from head to head, as they pass a given point.
- Time distance is the time required for the head of a convoy or any single vehicle to move from one point to another at a given rate of march.
- Road clearance time is the total time a convoy or an element needs to travel over and clear a section of road. Road clearance time equals the pass time plus time distance.

ROAD MOVEMENT CALCULATIONS

5-30. To complete a movement request, the moving unit must determine the arrival and clearance times at the SP, CPs, halts, and RP. Clearance times must be calculated for all march elements within the convoy. Use the following formula to compute the time distance of the convoy:

$$\text{Time Distance} = \text{Distance/Rate}$$

To calculate the clear times at each point along the route, planners must determine the pass time. Calculating pass time requires two calculations: vehicles per mile (density) and pass time. Use the following formula's to compute density and pass time:

$$\text{Density} = \frac{1 \text{ mile (1,760 yards)}}{\text{vehicle gap (yd) + average vehicle length (yd)}}$$

$$\text{Pass Time} = \frac{\text{number of vehicles X 60 + time gap}}{\text{density X rate}}$$

CONVOY MOVEMENT REQUESTS

5-31. Units needing to convoy must request and receive clearance before beginning movement. The request is submitted through command channels to the ITO or movement control element within whose area the convoy originates. Requests may be prepared manually or through TC-ACCIS.

5-32. Requests for convoy clearance are submitted on DD Form 1265 or on a theater movement bid. A special hauling permit (DD Form 1266) is used to request permission to move oversize/overweight vehicles on public roads. All sections of the forms must be completed. The convoy commander should identify specific CPs in addition to the required location and duration of each halt. The convoy commander may also request additional support and routing instructions.

5-33. Once the convoy clearance request has been reviewed and processed by the approving authority, the unit is issued a CCN. The movement of the convoy must be conducted as the convoy clearance directs. Deviations are not authorized without prior coordination with the approving authority.

5-34. The convoy commander must ensure that the routing specified on the approved convoy clearance is followed and that the estimated time of departure and estimated time of arrival are met at each of the CPs and rest halts.

PREPARATION OF THE GRAPHIC STRIP MAP

5-35. The strip map will show a picture of the route over which the convoy will travel. The following eight items must be shown on the strip map:

- Start point. The SP is the location where the convoy must start and comes under the active control of the convoy commander. As the SP is passed, each element should be traveling at the rate of speed and vehicle interval stated in the OPORD. When selecting an SP, select a place that is easily recognized on the map and on the ground.
- Release point. The RP is the place where convoy elements are released to their owning units. It must be clearly shown on the strip map. As with the SP, the convoy passes the RP without halting and at the rate and vehicle interval stated in the OPORD.
- Halts. Scheduled halts provide rest, messing, refueling, maintenance, and schedule adjustment, while allowing other traffic to pass. Halt time is included in the road march. Generally, all elements of the convoy halt at the same time so that the time gaps between elements remain the same. Every effort should be made so that dining and refueling halts coincide.
- Convoy routes.
- Major cities and towns.

- Critical points/checkpoints. CPs are designated along the route for control and maintenance of the schedule. Choose easily recognized features as CPs.
- Distance between CPs.
- North orientation.

The strip map will be detailed but not so cluttered with information that it is unreadable (see Figure 5-7, page 5-16). Listed are examples of what may be shown:

- Route data, including route numbers, major intersections, and mileage between points.
- Movement control data, including arrival and departure times at the SP, CPs, RP, state lines, and all halts.
- Logistical support data, including the location of all logistical support facilities. This may also include the procedures for requesting/obtaining medical and maintenance support.

CONVOY EXECUTION

5-36. Convoys should depart staging or marshaling areas in sufficient time to pass the SP at the prescribed time. Convoy commanders should use the close column formation when moving from the staging area to the SP of the main convoy route.

TRAFFIC

5-37. Main convoy routes are usually characterized by heavy, fast-moving traffic. Entering the route is a critical operation, but the risk can be reduced when civilian police assist by controlling traffic.

5-38. Ensure that all vehicles remain in the right lane after the convoy has entered the flow of traffic. Where the right lane is reserved for traffic turning off at the next exit, the convoy should use the next adjacent lane. Drivers must be alert and drive defensively.

5-39. To leave the route, either to enter a rest area or to take another route, move vehicles to the deceleration lane at the earliest opportunity and reduce to a safe speed to exit. Commanders should ensure that all vehicles remain with the convoy element.

SCHEDULED HALTS

5-40. Schedule halts so that the convoy will halt for 15 minutes at the end of the first hour of operation and 10 minutes every 2 hours thereafter. Minor adjustments to this schedule can be made when a suitable area is not available at these time periods. Schedule all meals and refueling halts at the same time. Take the following precautions when halting the convoy:

- Avoid areas on curves or reverse sides of hills.
- Leave enough room to allow the vehicles to park off the paved portion of the road and return to the road safely.
- Maintain a minimum distance of 3 feet between parked vehicles.

- Do not permit convoy personnel on the traffic side of vehicles except to perform prescribed maintenance.
- Make sure drivers and assistant drivers perform prescribed maintenance and check the security of cargo.
- Post guards at least 50 meters behind the last vehicle to warn traffic when departing a rest area.
- Ensure that there is space for other vehicles. Convoy vehicles should not occupy more than 50 percent of the parking area at any time.
- Maintain a sufficient time gap between serials to allow one to clear a rest area before the following serial arrives.

UNSCHEDULED HALTS

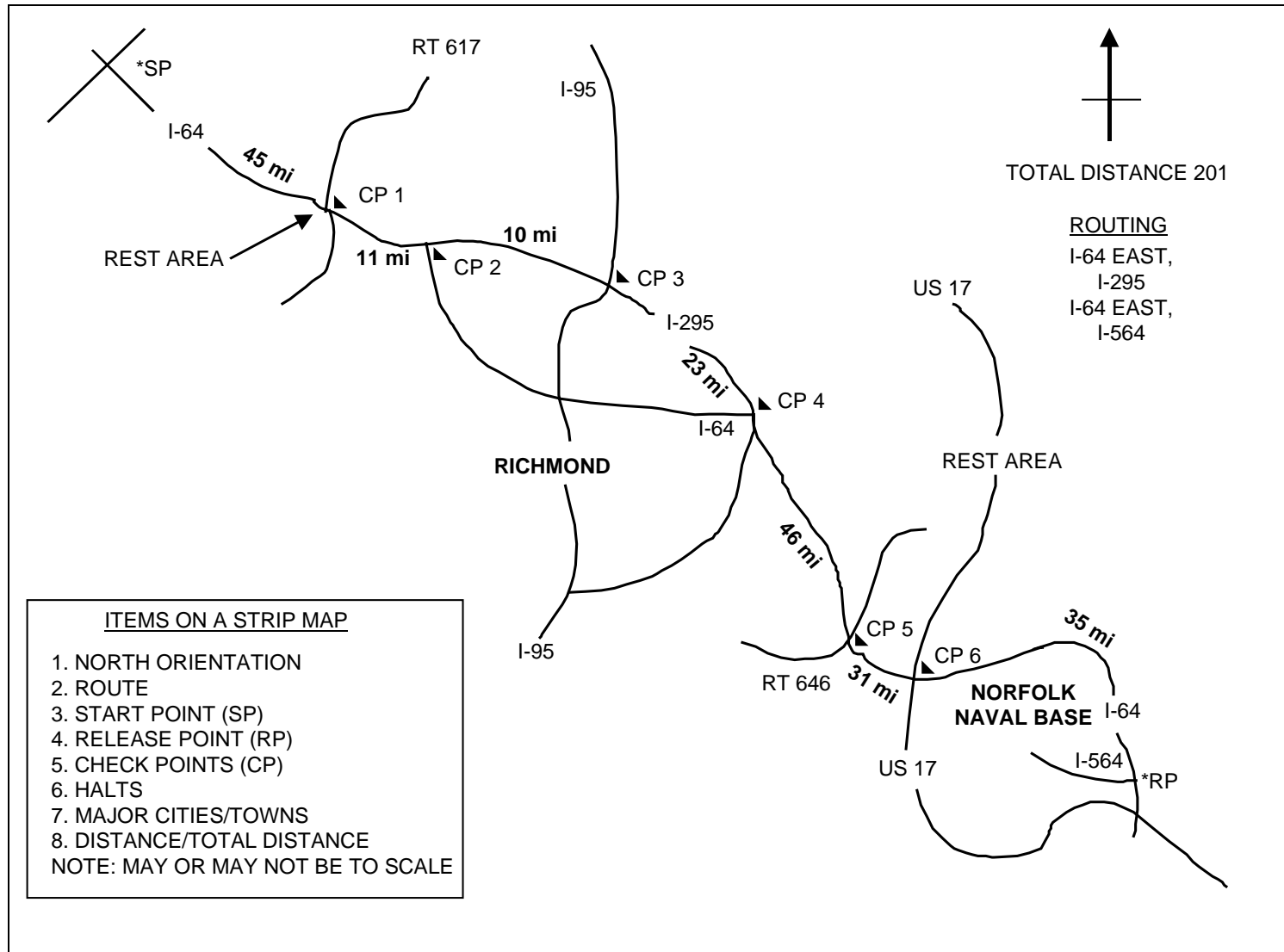
5-41. Move a disabled vehicle immediately from the traffic lane to a location where it will not be a hazard to other traffic. If a breakdown occurs, emplace a highway warning device either in the obstructed lane or on the shoulder of the road if the vehicle is on the shoulder. Do this before any attempt is made to repair the vehicle. DO NOT use military personnel to warn traffic by manual flagging except where warning devices do not give adequate warning.

5-42. In the event of an accident, make every effort to minimize its effects and keep the convoy moving. Do the following if an accident happens in the convoy:

- Keep moving. Only the vehicle immediately behind the vehicle should stop and render assistance.
- Give first aid. Give immediate attention to injuries.
- Report any accident to civilian police and wait for assistance. Do not move the damaged vehicle until an accident investigation has been completed by civilian police.
- Trail parties will assist civil authorities, investigate, and recover the vehicle as required.
- Clear the traffic lane. The crew of the affected vehicle should make every effort to clear the traffic lane as soon as possible.
- Complete an SF 91.

The first officer or NCO to arrive at the scene of the accident will take charge by supervising emergency aid, directing military traffic, warning civilian traffic, and directing the placement of warning devices until the trail officer arrives. The trail officer, aided by available medical and maintenance personnel, will supervise and direct care of the injured and disposition of the damaged vehicles. Further assistance needed should be requested from the agencies listed in the convoy OPORD.

Figure 5-7. Strip Map



MOVEMENT REPORTS

5-43. The convoy commander will normally provide a movement report to the next higher HQ. During deployment and selected exercises, special instructions included with the approved convoy clearance will direct the convoy commander to report to the appropriate HQ upon departure, at selected halt locations, and upon arrival. As a minimum, the report should contain the following:

- Convoy clearance number and convoy commander's name.
- Time of arrival at scheduled halts.
- Time of arrival at state lines or country borders.
- Complete details and circumstances of any accident or incident.